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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,872	02/10/2004	Bao Ha	Serie 5545	3882

7590 05/08/2007  
Linda K. Russell  
Intellectual Property Department  
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2700 Post Oak Boulevard, Suite 1800  
Houston, TX 77056

EXAMINER
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MCNELIS, KATHLEEN A

ART UNIT	PAPER NUMBER
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1742

MAIL DATE	DELIVERY MODE
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05/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/776,872	<b>Applicant(s)</b> HA ET AL.	
	<b>Examiner</b> Kathleen A. McNelis	<b>Art Unit</b> 1742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **Claims Status**

Claims 13-17 remain for examination wherein claim 13 is amended.

### **Acknowledgement of RCE**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.115, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/21/2007 has been entered.

### **Terminal Disclaimer**

As stated in the 01/16/2007 Office action, the Terminal Disclaimer filed 12/19/2006 is not proper because it is not signed by the attorney of record. Further, the Terminal Disclaimer filed 10/26/2005 is not proper because it is not signed by the attorney of record. An attorney or agent, not of record, is not authorized to sign a terminal disclaimer in the capacity as an attorney or agent acting in a representative capacity as provided by 37 CFR 1.34 (a). See 37 CFR 1.321(b) and/or (c).

### **Status of Previous Rejections**

The following rejections are withdrawn in view of amendments to the claims:

- Claims 13-17 under 35 U.S.C. 103(a) as being unpatentable over Grenier (U.S. Pat. No. 5,244,489) in view of Rathbone (5,268,016).

The following rejections are maintained:

- Claims 13-17 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of Ha et al. U.S. Patent No. 6,692,549.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magnet et al. (U.S. Pat. No. 6,062,043) in view of Rathbone (5,268,016).

The embodiment of Magnet et al. shown on Fig. 6 meets the limitations of instant claim 13 as follows:

Magnet et al. discloses a method for feeding a gas-consuming unit (Magnet et al. claim 1) where the gas consuming unit is a blast furnace (Magnet et al. claim 11) where the feed flow is compressed in a compression unit (21) and a first part (28) is sent to the gas-consuming unit (i.e. blast furnace) and a second part is sent to a separation apparatus (25) which separates the mixture to produce two gas flows and the one at higher pressure is sent to the gas consuming unit (Magnet et al. claim 1). Further, Magnet et al. discloses that the separation unit (25) is also fed with air delivered by an air compressor (51) (Magnet et al. claim 6) as shown on Fig. 6 for HF1:

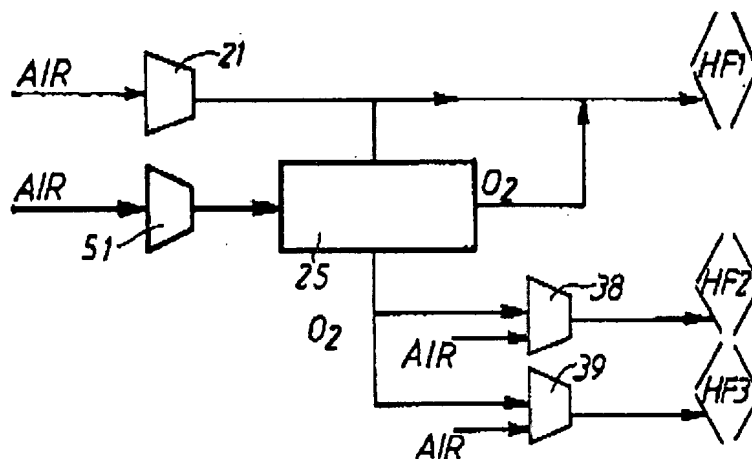


FIG. 6

Magnet et al. does not disclose removing a second gas from the air separation unit and heating the second gas and expanding the second gas to recover energy.

In a method for air separation combined with a blast furnace, Rathbone (5,268,019) discloses that it is known to be advantageous to recover work from nitrogen produced in cryogenic air separation plants (col. 1, lines 9-28). Rathbone discloses a method for removing a minor portion of the compressed air stream for separation, separating this minor stream into oxygen and nitrogen rich streams, and expanding the nitrogen stream to recover external work (col. 8, line 44-col. 9, line 4). Rathbone discloses several methods for heating and expanding the nitrogen:

- The nitrogen may be heated by non-contact heat exchange with a fluid, and expanded without mixing with another fluid (col. 9 lines 24-30), as in instant claim 13.
- The heat exchange fluid used to heat the nitrogen may be combustion gases (col. 9, lines 24-34), as in instant claim 14.
- The nitrogen may be mixed with combustion gases and expanded therewith (col. 9, lines 11-23), as in instant claim 15.
- A portion of the nitrogen stream may be heated by non-contact exchange with the exhaust gases from a turbine prior to being expanded. The off-gases used for heat exchange with the nitrogen being generated by combustion of the off gas from a blast furnace in a combustion chamber (col. 5, lines 26-52), as in instant claim 16.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to recover work by expanding the nitrogen rich stream generated in Magnet et al, by any of the means disclosed in Rathbone for heating and expanding the nitrogen to recover work, since Rathbone teaches that it is known to be advantageous to recover work from nitrogen produced in an air separation plant (col 1., lines 11-27).

With respect to claim 17, Magnet et al. discloses compressor (51) where additional air is compressed, passed through the air separator and mixed with the first portion as discussed above regarding claim 13.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 13 to 17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of Ha et al. U.S. Patent No. 6,692,549.

Although the conflicting claims are not identical, they are not patentably distinct from each other for the reasons given in the March 11, 2005 office action and as maintained in subsequent Office actions.

Regarding the amended limitations to claim 13, '549 discloses an additional compressor associated with the air separation unit (claim 11).

Claims 13-17 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6 and 11 of Magnet et al. (U.S. Pat. No. 6,062,043)

or claims 1, 2 and 8 of Brugerolle et al., (U.S. Patent No. 6,568,207) in view of Rathbone (U.S. Pat. No. 5,268,016).

With respect to instant claim 13, '043 discloses a method for feeding a gas-consuming unit (claim 1) where the gas consuming unit is a blast furnace (claim 11) where the feed flow is compressed in a compression unit (21) and a first part (28) is sent to the gas-consuming unit (i.e. blast furnace) and a second part is sent to a separation apparatus (25) which separates the mixture to produce two gas flows and the one at higher pressure is sent to the gas consuming unit (claim 1). Further, Magnet et al. discloses that the separation unit (25) is also fed with air delivered by an air compressor (51) (claim 6)

'207 claim 1 discloses a method for compressing a first stream of air and dividing the first stream into first and second parts and sending the first part to a unit consuming oxygen enriched air and sending the second part to a separation unit to produce an enriched oxygen stream and sending the enriched oxygen stream to the unit consuming oxygen enriched air. '207 claim 2 discloses that a third stream of air is compressed and sent to the air separation unit. '207 claim 8 discloses that the unit consuming oxygen-enriched air is a metal processing furnace (i.e. blast furnace).

In a method for air separation combined with a blast furnace, Rathbone (5,268,019) discloses that it is known to be advantageous to recover work from nitrogen produced in cryogenic air separation plants (col. 1, lines 9-28). Rathbone discloses a method for removing a minor portion of the compressed air stream for separation, separating this minor stream into oxygen and nitrogen rich streams, and expanding the nitrogen stream to recover external work (col. 8, line 44-col. 9, line 4). Rathbone discloses several methods for heating and expanding the nitrogen:

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- The nitrogen may be heated by non-contact heat exchange with a fluid, and expanded without mixing with another fluid (col. 9 lines 24-30), as in instant claim 13.
- The heat exchange fluid used to heat the nitrogen may be combustion gases (col. 9, lines 24-34), as in instant claim 14.
- The nitrogen may be mixed with combustion gases and expanded therewith (col. 9, lines 11-23), as in instant claim 15.
- A portion of the nitrogen stream may be heated by non-contact exchange with the exhaust gases from a turbine prior to being expanded. The off-gases used for heat exchange with the nitrogen being generated by combustion of the off gas from a blast furnace in a combustion chamber (col. 5, lines 26-52), as in instant claim 16.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, to recover work by expanding the nitrogen rich stream generated in '043 or '207 by any of the means disclosed in Rathbone for heating and expanding the nitrogen to recover work, since Rathbone teaches that it is known to be advantageous to recover work from nitrogen produced in an air separation plant (col 1., lines 11-27).

With respect to claim 17, '043 discloses compressor (51) where additional air is compressed, passed through the air separator and mixed with the first portion as discussed above regarding claim 13.

### ***Response to Arguments***

Applicant's arguments with respect to claims 13-17 have been considered but are moot in view of the new ground(s) of rejection.



*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571 272 3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KAM  
05/03/2007 *KAM*

*R*  
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